

WHAT IS CLAIMED IS:

1. A modified virus ablated of its natural receptors interactions with an unmodified or non-naturally occurring cell, said modified virus comprising a non-native polypeptide, said modified virus having an altered tropism conferred by said non-native peptide, and replicating only in cells that can interact with said non-native peptide, said virus being incapable of infecting a cell through a CAR-dependent entry pathway.
2. The modified virus of claim 1, which is derived from a virus selected from the group consisting of adenovirus, retrovirus, lentivirus, adeno-associated virus, Reoviridae, Picornaviridae, Parvoviridae, Papovaviridae and Caliciviridae.
3. The modified virus of claim 1 or 2, which is derived from human adenovirus.
4. The modified virus of any one of claims 1 to 3, which is derived from human adenovirus serotype 2 or 5.
5. The modified virus of any one of claims 1 to 4 wherein said non-native polypeptide replaces, is incorporated into, or forms a fusion protein with, a viral protein component of the wild type virus.
6. The modified virus of claim 5, wherein said viral protein component is an adenoviral fiber protein.
7. The modified virus of claim 6, wherein said non-native polypeptide is incorporated into an adenoviral fiber protein such that the wild-type fiber knob or cell binding domain thereof is removed.
8. The modified virus of any one of claims 1 to 7, wherein said non-native polypeptide is or comprises a combinatorial protein or an affibody.

9. The modified virus of any one of claims 1 to 8, wherein said non-native polypeptide comprises one or more sequence from a bacterial receptor ligand.
10. The modified virus of any one of claims 1 to 8, wherein said non-native polypeptide comprises at least one repeat of a sequence as set forth in SEQ ID NO:1.
11. The modified virus of any one of claims 1 to 8, wherein said non-native polypeptide comprises at least one repeat of a sequence as set forth in SEQ ID NO:2.
12. The modified virus of any one of claims 1 to 11, wherein said non-native polypeptide binds a non-naturally occurring production cell or permissive cell.
13. The modified virus of any one of claims 1 to 12, further comprising a retargeting adapter comprising i) a binding moiety for binding the non-native polypeptide and ii) a further binding moiety of a receptor for retargeting said virus on cells expressing said receptor.
14. The modified virus of claim 13, wherein said non-native polypeptide comprises at least one repeat of a sequence as set forth in SEQ ID NO:1 and said binding moiety for binding the non-native polypeptide comprises at least one repeat of SEQ ID NO:2.
15. The modified virus of claim 13, wherein said non-native polypeptide comprises at least one repeat of a sequence as set forth in SEQ ID NO:2 and said binding moiety for binding the non-native polypeptide comprises at least one repeat of SEQ ID NO:1.
16. The modified virus of any one of claims 13 to 15, wherein said adapter binds to the non-native polypeptide through non-covalent physical forces selected from the group consisting of van der waals forces,

electrostatic forces, stacking interactions, hydrogen bonding and steric fit.

17. The modified virus of any one of claims 1 to 12, wherein said non-native polypeptide comprises a cleavage site positioned in a location that enables a further binding moiety of a receptor to be added on the modified virus for retargeting said virus on cells expressing said receptor.
18. The modified virus of claim 17, wherein the binding moiety is capable of binding to a cell specific ligand.
19. The modified virus of any one of claims 1 to 18, which further comprises a site for insertion of one or more desired therapeutic genes or nucleic acid molecules.
20. A cell containing a modified virus as defined in any one of the claims 1 to 19.
21. A permissive cell for a modified virus as defined in any one of claims 1 to 19, which is capable of being cultured to propagate said modified virus.
22. A non-naturally occurring permissive cell expressing a surface receptor recognizing or binding a non-native polypeptide as defined in any one of claims 1 to 19.
23. A non-naturally occurring permissive cell expressing a surface receptor recognizing or binding a non-native polypeptide as defined in claim 10, wherein said surface receptor comprises at least one copy of the amino acid sequence as set forth in SEQ ID NO:2.
24. A non-naturally occurring permissive cell expressing a surface receptor recognizing or binding a non-native polypeptide as defined in claim 11,

wherein said surface receptor comprises at least one copy of the amino acid sequence as set forth in SEQ ID NO:1.

25. A method for producing a modified virus as defined in any one of claims 1 to 19 in cell culture, comprising the steps of: i) genetically modifying a virus to produce a modified virus ablated of its natural receptors interactions with an unmodified or non-naturally occurring cell, said modified virus comprising a non-native polypeptide, said modified virus having an altered tropism conferred by said non-native peptide, and replicating only in cells that can interact with said non-native peptide; ii) infecting permissive cells with said modified virus; and iii) culturing said cells to produce the virus.
26. The method of claim 25, further comprising a step of iv) harvesting the modified virus produced.
27. The method of claim 26, further comprising a step of v) purifying the modified virus produced.
28. The modified virus of any one of claims 1 to 19 for use in therapy.
29. Use of the modified virus of any one of claims 1 to 19 in the preparation of a medicament for the treatment of tumor cells or proliferating cells.
30. A pharmaceutical composition comprising a modified virus as defined in any one of claims 1 to 19 and a pharmaceutically acceptable carrier or excipient.
31. A reagent kit comprising a modified virus as defined in any one of claims 1 to 19 and a cell as defined in any one of claims 20 to 24.
32. A medicament or a precursor thereof comprising a virus as defined in any one of claims 1 to 19.

33. Use of a virus as defined in any one of claims 1 to 19 for the preparation of a medicament or a precursor thereof for treating or preventing genetic diseases, tumor diseases, autoimmune diseases or infectious diseases.